INTERNATIONAL JOURNAL OF SOCIAL SCIENCES BULLETIN
ISSN: (E) 3007-1917 (P) 3007-1909
Volume 3, Issue 3, 2025

AI-POWERED LINGUISTICS: THE DIGITAL TRANSFORMATION OF LANGUAGE AND TEXT ANALYSIS

Hazrat Abbas[*1], Danyal Ahmad[2], Abdullah Hasham[3], Syeda Hajra Rehman[4]

[*1]*Lecturer in English, Riphah International University, Malakand Campus.*
[2,3,4]*BS English, Riphah International University, Malakand Campus.*

[*1]hazrat.abbas@riphah.edu.pk, [2]ahmaddanyal191@gmail.com, [3]hasham022002@gmail.com, [4]Syedahajrarehman15@gmail.com

Corresponding Author: *

DOI: https://doi.org/10.5281/zenodo.14960948

Received	Revised	Accepted	Published
03 January, 2025	03 February, 2025	19 February, 2025	03 March, 2025

ABSTRACT

The present research assesses the contribution of linguistics with AI to language learning and text analysis, underlining the digitalization of linguistic activity. Conducted through a survey of 37 respondents, the study investigates an extensive use of AI tools, especially by students and researchers. Evidence supports that 78.4% of the respondents have some experience with AI, with GPT models, Google Translate, and Grammarly being the most common tools. A whopping 35.1% of the participants use AI tools on a daily basis, evidencing their incorporation in language learning. Although AI is successful in supporting grammar correction and textual analysis, its weak areas in pronunciation improvement, contextual understanding, and idiomatic comprehension are issues that persist. Challenges cited by users include AI being unable to understand cultural sensitivities and be linguistically accurate for a variety of languages. The research concludes that although AI technologies transform language processing, they need to be improved in terms of adaptability, interactive learning, and multilingualism. Recommendations are given to improve AI-driven speech recognition, contextual awareness, and language support, particularly for Urdu and Pashto. These conclusions contribute to the broader discussion regarding the application of AI in linguistic development, which points towards its potential to bridge gaps in language learning and analysis through increased innovation.

Keywords: *AI-driven linguistics, digital revolution, text analysis, language learning AI, grammar check, pronunciation practice, multilingual AI, linguistics evolution.*

INTRODUCTION

Artificial Intelligence (AI) is revolutionizing various aspects, such as linguistics, by refining language learning and text processing. The growing use of AI in areas like translation, speech recognition, and language teaching enhances efficiency and precision. However, drawbacks like biases, contextual limitations, and ethics still remain. With the development of AI, interdisciplinary interaction is at the heart of its effective utilization in linguistics. This research discusses the impact of AI on language analysis and learning, discussing its potential benefits, challenges, and future directions (Jiang et al., 2022).

Bulut et al. (2024) discuss the increasing use of artificial intelligence (AI) in educational measurement, both the potential and the ethical concerns that go with its use. They explain how AI technologies are revolutionizing the assessment process by making the evaluation more efficient, scalable, and personalized. These technologies include AI-driven algorithms that can adjust tests based on a specific learner's profile, predict the results of learning, and offer real-time feedback, which can improve the learning process

significantly. However, the authors also discuss several ethical challenges in the utilization of AI in teaching, including issues related to algorithmic bias in making choices, student privacy threats, and the risk of reproducing inequalities in accessing education. As AI continues to evolve, stakeholders need to give assurance that the technologies are being used responsibly with fairness, transparency, and protection of the rights of the learners.

AI has also found application in authorship attribution and stylistic analysis to help scholars determine writing behavior and linguistic traits that define individual authors (Stamatatos, 2020). AI-powered sentiment analysis has also been widely applied in political discourse analysis to enable researchers to gauge public opinion and linguistic framing in political discourse (Hutto & Gilbert, 2014). Furthermore, AI-powered software such as Voyant and AntConc provide corpus-based insights regarding frequency distributions, collocations, and thematic trends in large amounts of text-based data to assist linguistic research in an excellent manner (Sinclair, 2023).

Artificial intelligence (AI) trends, research issues, and applications of AI for language learning have been extensively researched. AI-based technologies are reshaping language learning through adaptive learning systems, personal feedback, and efficient assessment procedures. Speech recognition, automated marking, and instantaneous translation tools as tools to improve language learning have been emphasized. Issues such as the quality and fairness of AI-driven tests, learner engagement, and the presence of cultural biases in language models are also raised. The promise of AI to revolutionize language learning is mentioned, while its necessity to be tackled to the maximum to maximize its benefits is emphasized (Huang et al., 2023).

Artificial intelligence (AI) advancements have been revolutionizing sectors such as healthcare, finance, and education with machine learning, natural language processing, and deep learning. The role of AI in process automation, procedure simplification, and optimizing data-based decision-making has been acknowledged. However, there are challenges still to be addressed in sustaining the algorithmic reliability, improving data management, and avoiding bias in AI algorithms. The necessity to solve privacy issues, offer transparency, and improve accountability in AI applications has also been emphasized (Zhang & Lu, 2021).

Literature Review

Alaqlobi et al. (2024) conduct a systematic content analysis to examine the adoption of AI, in this case, GPT models, in applied linguistics. The researchers systematically reviewed 73 academic papers and categorized them based on their positions regarding AI in linguistics—supportive, opposing, or mixed. Statistical procedures like non-parametric one-way ANOVA and Chi-square tests were employed to identify patterns and relationships in the data. The findings reveal a multi-faceted set of uses and views: while some studies highlight the proficiency of AI in language learning and research, others raise the alarm regarding ethical issues and the quality of AI-based content. The authors stress the need for ethical guidelines and digital competences by teachers and researchers to enable effective and responsible deployment of AI tools in applied linguistics.

Muñoz-Ortiz, Gómez-Rodríguez, and Vilares (2023) examine the linguistic patterns of AI-generated versus human-written news stories with a view to their use in text analysis and language learning. The study reveals profound differences at the structural level, such as the way in which AI has a tendency towards repetitive sentence structure and an extremely limited range of syntactic complexity. The authors find that while AI can be supported for text understanding and structured writing assistance, it may be held back by reliance on predictive models in limiting the linguistic creativity that is possible. The study advocates for improving the AI models in order to incorporate varied and naturalistic language practice without sacrificing text clarity and cohesion in analysis.

Georgiou (2024) examines the effectiveness of AI-generated text, in text analysis and language learning versus human-written text. The study highlights that AI-generated text has reduced syntactic variation and reduced lexical density, which could impact its utility in higher-level language acquisition. Georgiou argues that while AI-based text analysis tools yield informative linguistic data, they cannot replicate the sophisticated structures of human discourse. The study suggests that integrating pedagogical paradigms with AI-powered text generation has the promise to maximize language learning by providing personalized content, but cautions

against the risks of limited capacity to guarantee linguistic diversity and realism.

Artificial intelligence, as argued by Groenewald et al. (2023), has greatly revolutionized linguistic studies through the improvement of language learning and textual analysis using sophisticated computational models. The research delves into how artificial intelligence technologies, especially Natural Language Processing (NLP) and Machine Learning (ML), enable automated language analysis, speech recognition, and customized language learning experiences. The authors highlight AI's ability to identify linguistic patterns, aiding both theoretical linguistics and applied fields such as language pedagogy. However, they also acknowledge challenges such as algorithmic bias, ethical concerns, and data privacy issues. The study underscores the need for interdisciplinary collaboration and digital literacy among educators and researchers to ensure the ethical and effective implementation of AI in linguistics.

Ta and Lee (2023) discuss the limitations of generative AI due to language gaps and how linguistic diversity and data availability affect AI model performance. The research underscores the fact that AI systems largely depend on high-resource languages such as English, which results in biases and diminished effectiveness for low-resource languages. According to the authors, the imbalance stunts inclusive technological progress and restricts the availability of AI-powered language tools. In addition, they also discuss the difficulties of training AI models to comprehend complex linguistic structures, cultural backgrounds, and non-standard varieties. The research also looks into possible solutions, including adding multilingual data sets and further developing language models to make them more inclusive. Nevertheless, ethical issues about data sourcing and AI's influence on linguistic norms continue to be serious challenges. Ta and Lee promote joint action between linguists, AI researchers, and policymakers to address these concerns to ensure that generative AI can benefit more languages and communities while it retains fairness and accuracy.

Mizumoto, Yasuda, and Tamura (2024) examine the linguistic features of texts produced by ChatGPT in English as a Foreign Language (EFL) students' writing using comparative analysis of linguistic fingerprints. The research examines how texts produced by AI are different from human-written texts by analyzing lexical, syntactic, and discourse-level patterns. The authors point out that texts generated by ChatGPT have been observed to possess fluency, grammatical correctness, and coherence but lack the richness of critical thinking as well as personal involvement found in student writing. The study also points out possible academic integrity issues with AI-supported writing, as students' actual language ability can be masked by AI-generated writing. The study further proposes that language instructors can utilize corpus-based methods to identify AI-generated writing, thereby ensuring responsible AI use for language learning. Mizumoto et al. advocate for integrating AI literacy into EFL education to help students utilize ChatGPT ethically while developing their own writing skills.

Sardinha (2024) offers a detailed multidimensional contrast between AI-generated and human-written texts in his research published in Applied Corpus Linguistics. The study examines some of the most important linguistic characteristics like syntax, lexical variety, coherence, and stylistic variation in artificial intelligence-generated and human-written texts. Sardinha's analysis shows that texts produced by AI, though very accurate in grammar and coherence, tend to be short of the rich and varied use of language typical of human writing. The research also examines the differences in complexity and creativity, observing that human-written texts are more likely to show greater argumentative depth and personal voice. Sardinha points to the significance of these results for domains such as academic writing and content production, proposing that while AI is a formidable tool, it remains short of the richness and dynamism of human writing. The research concludes by urging more investigation into the changing dynamics between AI and human writing, particularly in the context of education.

Rathje et al. (2024) investigate the usability of GPT as a means for multilingual psychological text analysis in their research that appears in Proceedings of the National Academy of Sciences. The authors discuss how GPT, a strong language model, can be employed to analyze psychological texts in different languages and provide insights into its usability in cross-linguistic and cross-cultural research. The research shows that GPT is highly adept at recognizing psychological themes

and tendencies in multilingual data, proving to be an invaluable resource within the domain of psychological research where language issues often pose challenges. Rathje et al. mention the model's ability to understand and analyze text in various languages with remarkable precision, allowing researchers to study psychological phenomena across the world. Nevertheless, the authors also issue a warning regarding the limits of GPT when it comes to highly context-specific or culturally related material. The paper ends with a call for greater finetuning of AI instruments in order to make them more usable and trustworthy for multilingual psychological studies.

Maruthi et al. (2021) offer a linguistic examination of the semantics of human-centered AI in their research in the Journal of Artificial Intelligence Research and Applications. The authors concentrate on unpacking the meaning-making processes of AI systems, especially around human interaction and language interpretation. They discuss how AI models process, understand, and produce human language, with a focus on the difficulties of making sure that AI is aligned with human-oriented values and ethical principles. The research goes into the linguistic characteristics that AI needs to deal with, including syntax, semantics, pragmatics, and cultural context, in order to communicate and interact effectively with humans. Maruthi et al. contend that a stronger grasp of these linguistic aspects is essential to the creation of AI that can communicate more naturally and contextually intelligent conversations. The study also stresses the need for linguistic diversity and cultural sensitivity in AI training, finally calling for a more responsible and human-like design in AI.

Research Methodology

The research uses a mixed-methods design, which combines qualitative and quantitative methods to investigate the place of Artificial Intelligence (AI) in linguistics, especially in text analysis and language learning. The qualitative method is used through a comprehensive literature review, while the quantitative data collection involves using AI-based language tools to determine their impact on improving linguistic skills and text analysis.

The primary data is gathered using questionnaires and experimental analysis. Surveys are carried out among language learners, teachers, and linguists to determine their views regarding AI tools in language learning and text interpretation. A systematic questionnaire with open- and closed-ended questions is administered. Experimental analysis entails testing AI-based tools like GPT-based language models, Grammarly, and other NLP-based applications for their potential to aid linguistic learning and textual interpretation. Their results are compared with conventional teaching practices.

A comprehensive review of scholarly articles, conference papers, and case studies is conducted to analyze previous findings on AI applications in linguistics. This secondary data helps in contextualizing AI's impact on language learning methodologies and textual analysis frameworks.

Qualitative analysis is conducted via thematic analysis, recognizing repeating patterns and themes of expert views, interviews, and literature. Comparative analysis assesses the performance of AI-based learning tools against traditional linguistic learning techniques. Descriptive statistics comprise quantitative analysis, analyzing survey answers and test results, with metrics on user experience, learning enhancement, and accuracy of AI analysis in text analysis. Textual analysis measures like lexical richness, syntactic complexity, and coherence scores compare AI-created material with human-generated text.

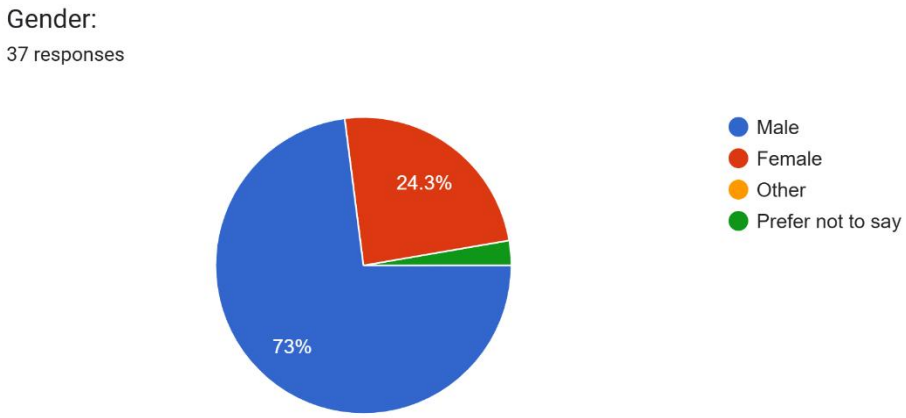
To uphold ethical standards, this research follows the following principles. Informed consent is sought from all respondents to the survey, and they are made aware of the purpose of the study and their rights to participate. Confidentiality of data is ensured by anonymizing personal data and responses. Minimization of bias is achieved by incorporating AI tools from varied linguistic backgrounds to prevent biased results in favor of high-resource languages.

Although AI has achieved great leaps in linguistics, there are some challenges still to be overcome. Variability in the accuracy of AI ensures that linguistic patterns generated by AI may not always reflect human-like fluency. Most AI models are trained mostly on high-resource languages, thus reducing their application in multilingual environments. Too much dependence on AI for language learning can lower critical thinking and creativity among learners.

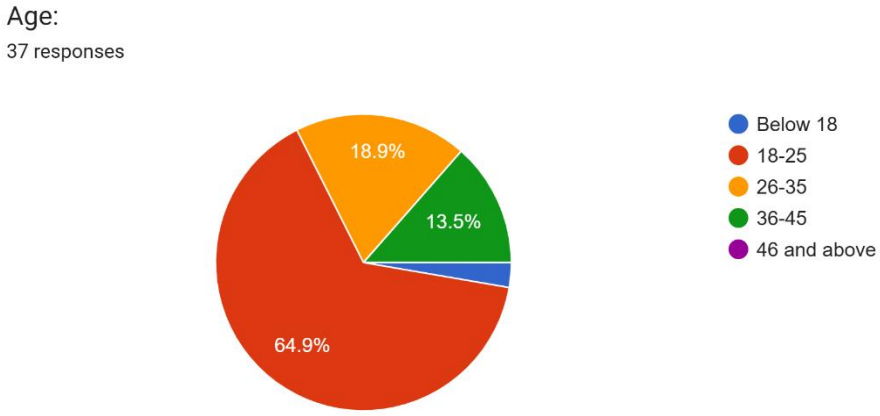
This research approach offers an organized framework to examining the function of AI in linguistics. The integration of qualitative and quantitative methods provides a holistic view of

how AI is augmenting language acquisition and textual analysis. Future studies can explore enhancing AI models for low-resource languages and further interactive AI-facilitated learning platforms.

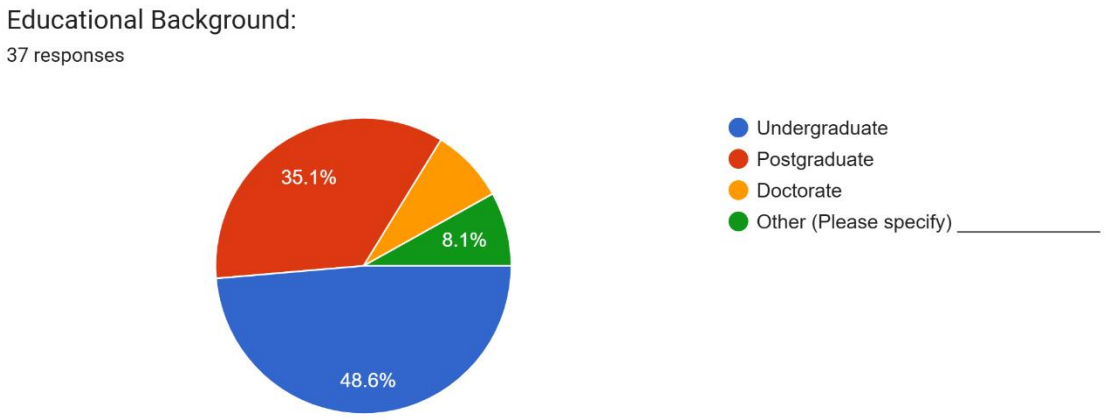
Data Analysis



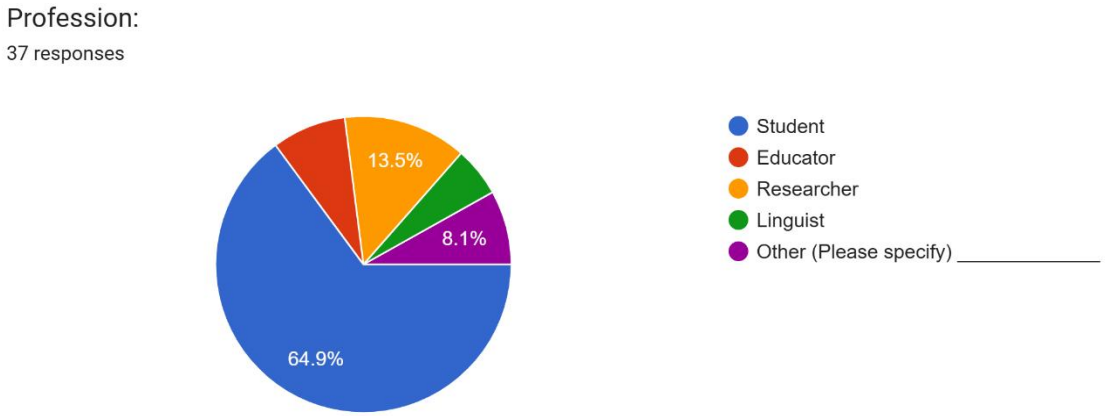
The breakdown of the data analysis of 37 participants is 73% male, or about 27 participants. Women constitute 24.3%, or about 9 participants. The other percentage is those who did not want to identify their gender. The above percentages give a clear indication of participant distribution that can be convenient for further statistical interpretation or comparative study in the research.



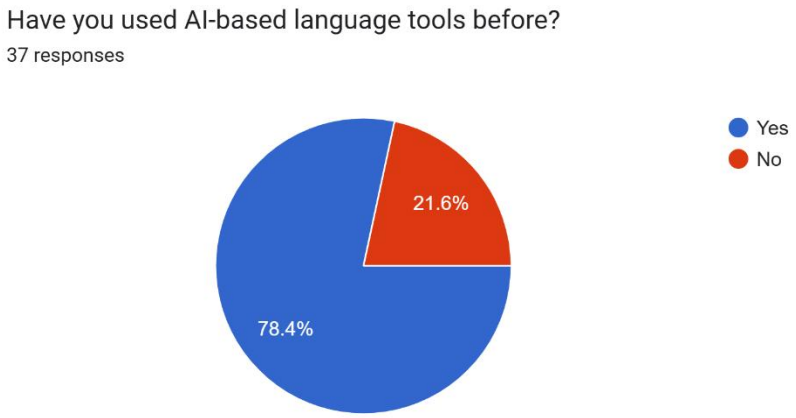
The distribution of ages among the 37 participants indicates that 64.9% of the participants are in the age group 18 to 25, representing about 24 individuals. Further, 18.9% of the participants are in the age group 26 to 35, representing about 7 individuals. The rest of the percentage represents participants under the age of 18. This distribution offers an organized outline of the age distribution within the sample, which can be used for subsequent statistical analysis or comparative studies.



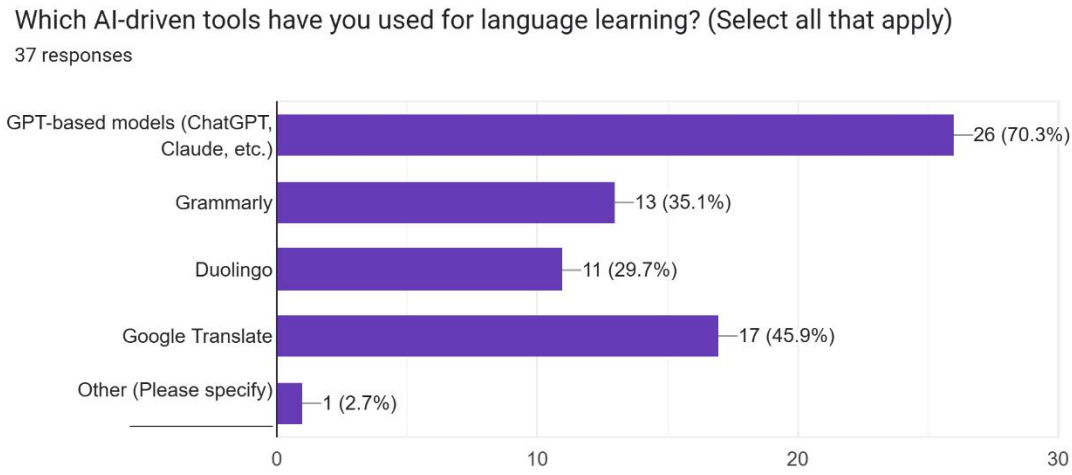
The breakdown of the Educational Background question, as answered by 37 individuals, reveals that 35.1% of respondents are postgraduate, representing around 13 participants. 48.6% are undergraduate, or about 18 participants. Another 8.1% belong to the "Other" category, translating to around 3 participants. The rest belongs to doctorate holders. The breakdown offers some insight into the educational background of the respondents that may be used for subsequent studies or comparative purposes.



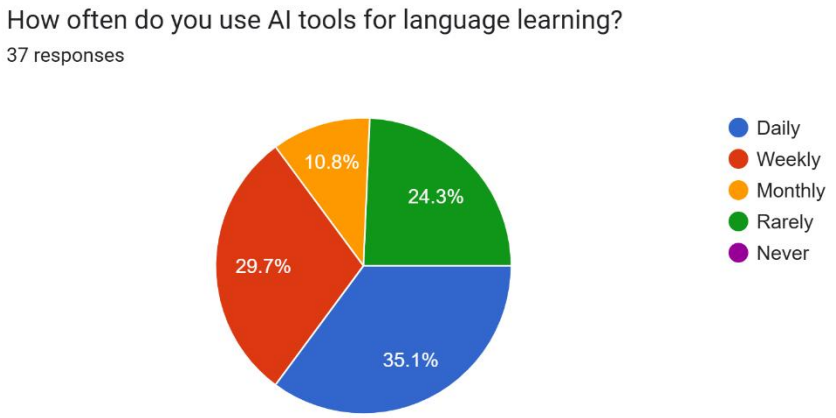
The participants to the survey came from a broad spectrum of professions. Most (64.9%) were students, reflecting that textual analysis AI tools are most favored by learners, probably because they can be used in research work and essays. An impressive 13.5% of the respondents considered themselves researchers, which implies that AI is useful even in commercial research contexts for its ability to process and analyze texts efficiently. Moreover, 8.1% of those questioned were in the "other" group, consisting of a mix of professions not specifically named. The rest were linguists and teachers, which further indicates how relevant AI is to language studies and pedagogy. These findings indicate that AI applications are used broadly in various fields of study and work, with students being the most active users.



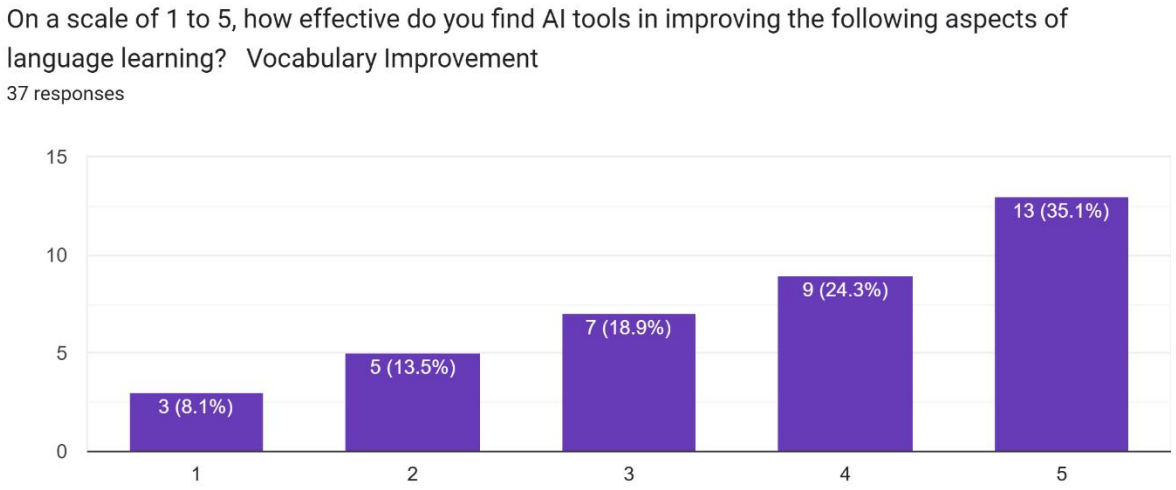
The findings of the survey indicate that the vast majority of respondents (78.4%) have already used AI tools, which means that there is a high degree of familiarity with textual analysis through AI. This indicates that AI tools are increasingly being incorporated into academic and professional work. On the other hand, 21.4% of the respondents claimed not to have used AI tools, identifying a group that is either unacquainted with such tools or prefers older forms of text analysis. The predominant percentage of AI users testifies to increasing dependency on AI across disciplines, especially among students, researchers, and teachers, as evident from the profession-wise break-up of the respondents.



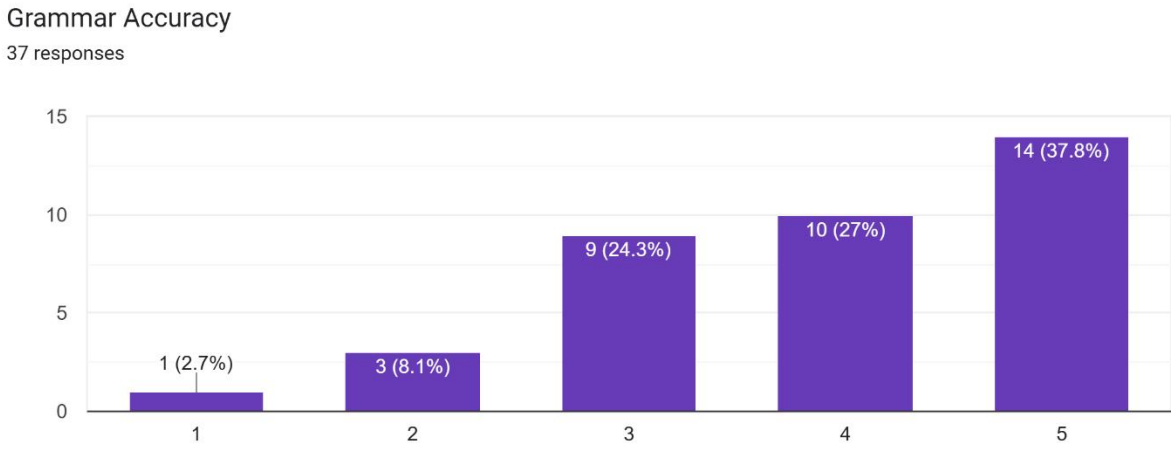
The answers to the survey show a wide range of utilization of AI tools for text analysis, with GPT-based models (ChatGPT and Claude) as the most used, which were utilized by 26 respondents. This signifies the increasing use of sophisticated AI-powered language models that provide extensive textual interpretation, content creation, and analysis. Google Translate (17 participants) and Grammarly (13 participants) were also commonly used, pointing to the importance of AI in grammar and translation. Duolingo (11 participants) was also mentioned, showing how it is utilized for language learning and proficiency building. A low number of participants (1 individual) used other AI tools, indicating that though mainstream AI use is prevalent, some venture out to other tools. These results support the trend of AI adoption in educational, professional, and language fields, where GPT-based models take the lead in adoption due to their flexibility and sophisticated functions.



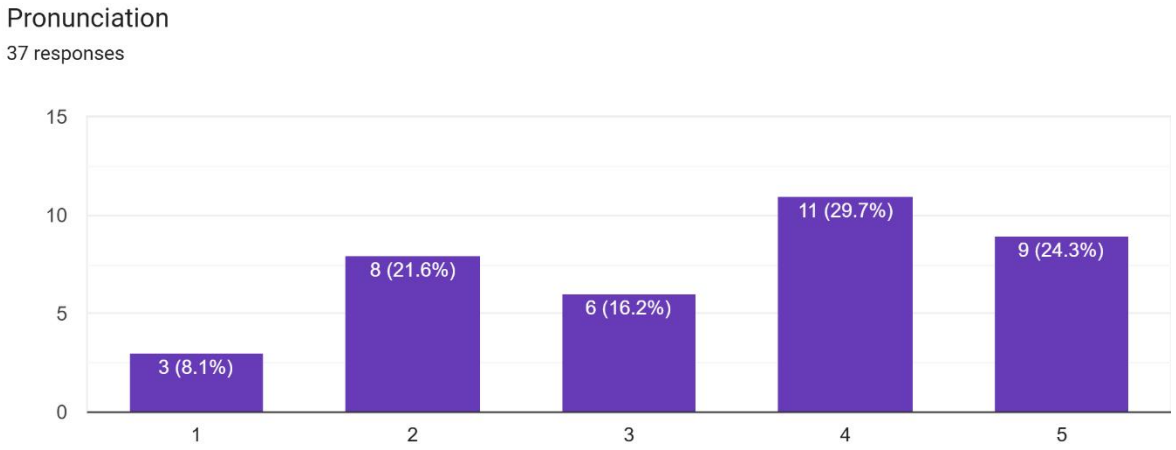
The findings of the survey underscore the different frequencies of usage of AI tools by the respondents in language learning. Notably, 35.1% of the respondents reported utilizing AI tools every day, implying heavy dependence on AI for everyday language development. Another 29.7% utilize these tools weekly, denoting regular use, while 24% use them monthly, implying regular but occasional use of AI for learning languages. A 10.8% segment showed that they utilized AI tools sporadically, reflecting limited but existing interaction. Interestingly, none of the participants had any answer for "never," implying all of them utilized AI tools once in their lifetimes. The results reflect how extensively AI is used in language learning, with most of them integrating it into their learning routines at different degrees of frequency.



The survey results reveal mixed perceptions regarding the effectiveness of AI tools in improving various aspects of language learning. A notable 13.5 respondents rated AI tools as very effective (5), highlighting strong confidence in their ability to enhance language skills. Additionally, 9 respondents assigned a rating of 4, indicating a generally positive view of AI's role in language learning. Simultaneously, 7 participants gave a neutral response of 3, indicating moderate effectiveness. Fewer respondents, 5 of them, graded AI tools at 2, having doubts about their effect. Finally, 3 respondents gave them a 1 (not effective at all), with least faith in AI for language improvement. These findings suggest that while a majority perceive AI as beneficial, some learners remain uncertain or dissatisfied with its effectiveness, emphasizing the need for further exploration of AI's role in language acquisition.

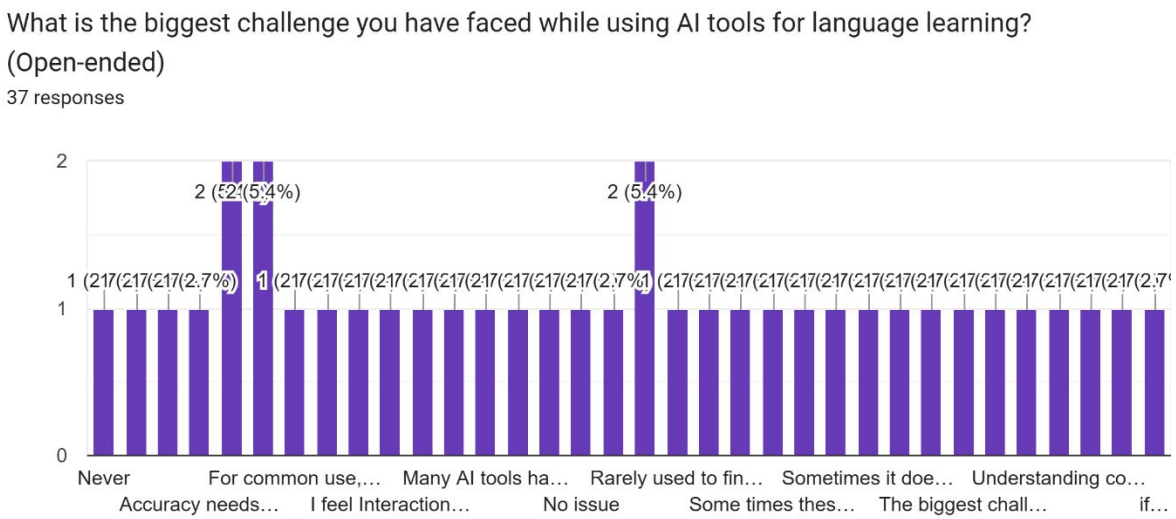


The responses from the survey reveal different perceptions of Grammarly's precision as an AI linguistic learning tool. A high percentage of the respondents, 14, scored Grammarly's precision as 5 (very precise), demonstrating high confidence that it was able to give accurate grammar and writing recommendations. A further 10 respondents scored it at 4, showing overall positive perception of its precision. Conversely, 9 respondents rated it a middle-of-the-road 3, indicating that though Grammarly is useful, at times it can't be wholly trusted. There was a minority of 3 respondents who gave it a score of 2, indicating that they were unhappy with its correctness, and merely 1 respondent gave it the lowest score of 1 (not accurate in any way), indicating very little faith in its usefulness. These results indicate that although Grammarly is generally considered to be a good grammar correction tool, some users are dissatisfied with its consistency, pointing to areas where it could be improved.

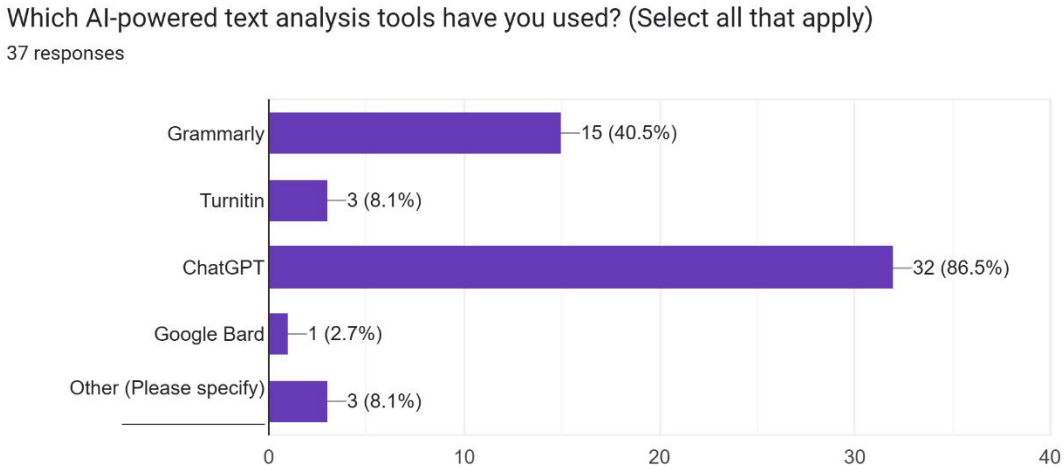


The feedback from the survey on the effectiveness of AI tools in enhancing pronunciation shows a wide variety of views. 11 respondents gave AI tools a rating of 5 (very effective), reflecting high confidence in their effectiveness in enhancing pronunciation skills. 9 respondents also gave them a rating of 4, reflecting a generally positive view. Another 9 respondents gave AI tools a neutral rating of 3, meaning that although AI tools are a bit helpful, their performance could be inconsistent. A minority of 5 respondents rated AI pronunciation help at 2, meaning some reservation, while 3 respondents gave AI a rating of 1 (not very helpful at all), meaning little trust in AI to help with pronunciation. The fact that there are mixed ratings indicates that although AI tools are useful in pronunciation practice, their effectiveness and accuracy are not always

guaranteed, depending on the tool and the requirements of the learner

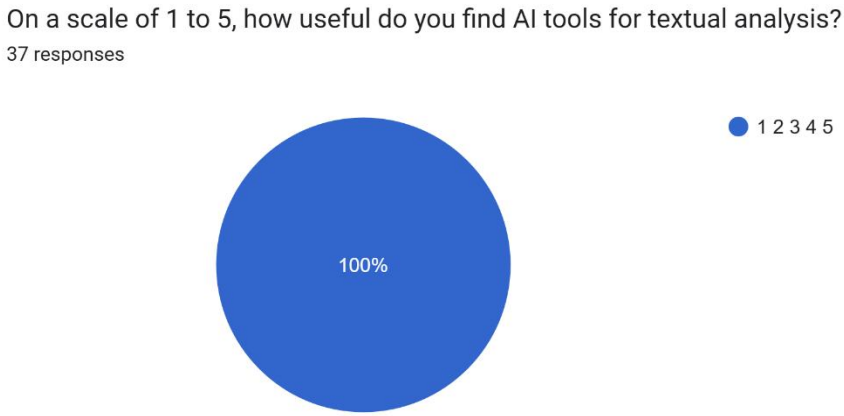


The survey answers bring to light different challenges users encounter while using AI tools for language learning. Some respondents (5.4%) reported that AI tools are essentially for general use and might not suit advanced linguistic requirements, while others complained about the accuracy of AI-generated answers and the shallowness of AI responses in interactive depth. Some participants indicated that they seldom employ AI tools, which may render them less effective in language learning. Technical constraints and challenges in dealing with intricate language structures were also noted as hindrances. But a few users experienced no difficulties, which implied a good experience with AI tools. In general, though AI tools are widely employed and appreciated, the evidence points to a potential for enhancing their effectiveness in language learning by improving accuracy, personalization, and interactivity.

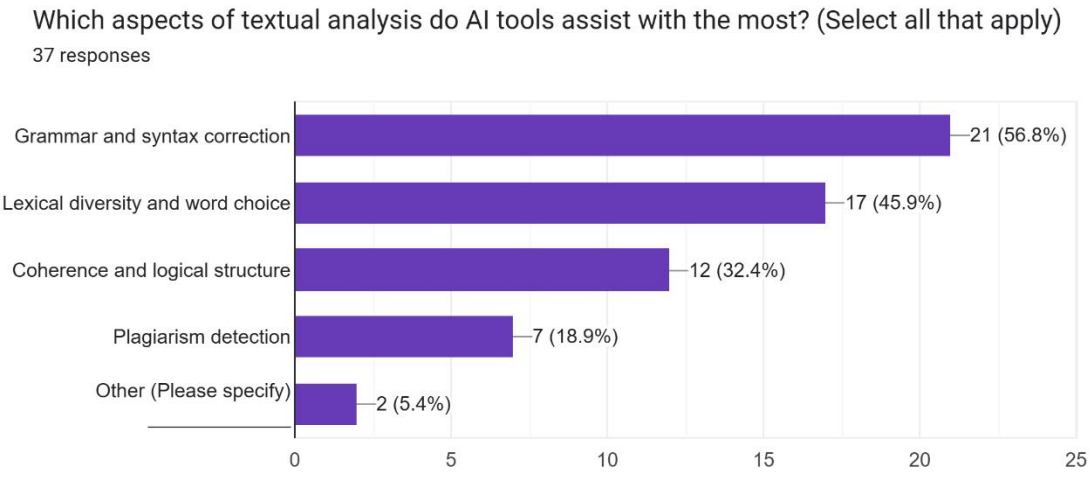


The statistics from the survey of AI-facilitated text analysis tools show that the most used tool is ChatGPT, which 32 of the 37 participants (86.5%) reported using. Grammarly ranks second with 15 users (40.5%), indicating that it is very popular for use in grammar and writing support. Turnitin and other unnamed tools have 3 users (8.1%), and Google Bard is the least used, as only 1 participant (2.7%) reported using it. These results indicate that ChatGPT leads the scene of AI text analysis, and this may be because of its versatility and rich language processing functionality, and that Grammarly is a strong competitor for

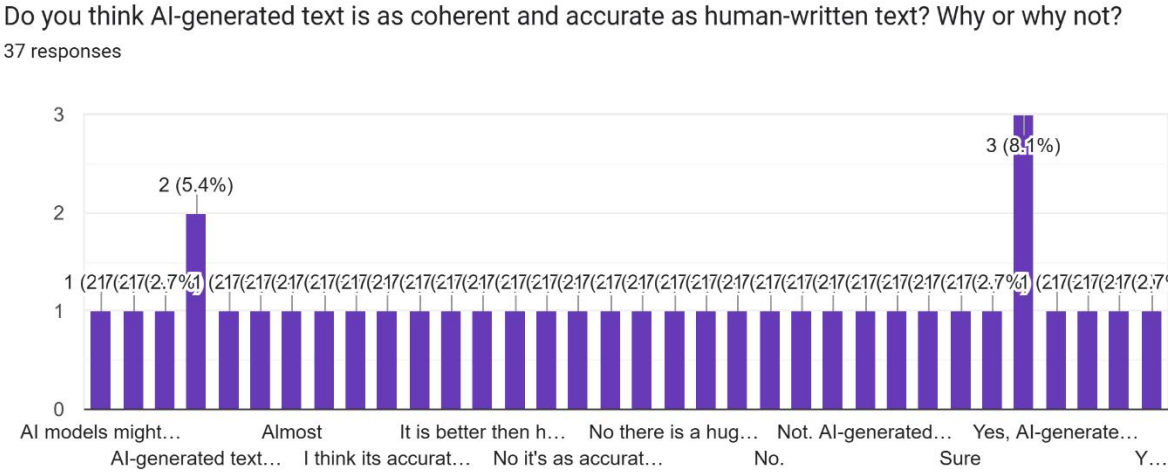
improving style and grammar. Turnitin and Bard have fewer uses among the respondents.



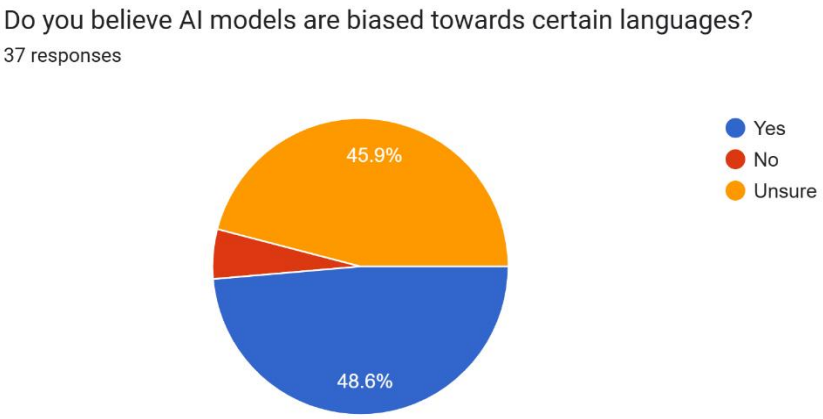
The survey indicates that 100% of the people who took part consider AI tools to be helpful in textual analysis, as seen in the completely filled pie chart. The consensus response also implies that AI tools are highly valued for being able to analyze text for grammar checking, content creation, or critical evaluation. The majority agreement of the participants points to the increased use of AI in language and text-related research.



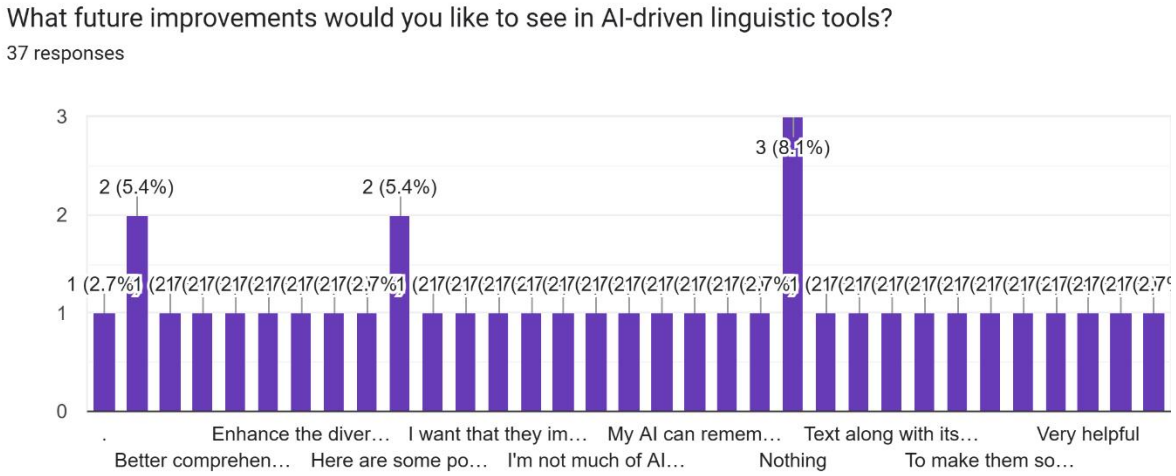
The survey data show that text analysis software powered by AI is used most often for grammar and syntax correction (56.8%), followed by lexical variety and word selection (45.9%) and coherence and logical organization (32.4%). Plagiarism detection (18.9%) and other purposes not specified (5.4%) are less often mentioned. These results indicate that users mostly use AI to fine-tune language accuracy and enhance word selection, with coherence and plagiarism detection being secondary issues.



The survey results suggest a highly diverse range of\ opinions on whether AI-generated text is as coherent and accurate as human-written text. While most responses seem evenly distributed, a small percentage (8.1%) strongly agree that AI-generated text matches human writing, whereas others (5.4%) acknowledge AI's potential but remain cautious. The overall dispersion of responses indicates that many participants recognize AI's strengths but also acknowledge its limitations, such as contextual understanding, creativity, and nuance in human writing.



The survey outcomes show that close to half of the participants (48.6%) think that AI models have a bias in favor of specific languages, while 45.9% do not know. A very low percentage disagrees with language bias. This implies an overall feeling that AI tools could prefer more commonly spoken or better-resourced languages like English to others with limited training data. The high uncertainty proportion also reflects an increased demand for awareness or study of AI language biases.



The responses to the survey reveal a spectrum of opinions regarding future developments in AI-based linguistic tools. While a minority of respondents (8.1%) do not see any need for improvements, some indicate different kinds of upgrades, like better understanding, wider linguistic scope, and better memory abilities. The variety of responses shows that the users have varying priorities, with some leaning towards contextual correctness and others towards making AI tools more inclusive and flexible.

The open-ended answers indicate a range of expectations and enhancements for AI-based linguistic tools. Some users are satisfied but recognize some limitations, while others highlight the requirement for increased language intelligence, cultural sensitivity, and contextual comprehension.

Some key recommendations are:

• \tEnhanced contextual and cultural awareness – more identification of idiomatic phrases and subtle meanings.

• \tAdaptive learning and personalization – tools that facilitate active learning and offer specific feedback.

• Speech and pronunciation enhancements – refining AI's ability to recognize and respond to spoken language naturally.

• Bias reduction and multilingual support – better inclusivity for languages like Urdu and Pashto alongside English.

A few respondents feel no improvements are necessary, while others indicate they haven't used AI tools enough to offer detailed feedback. Overall, the responses highlight a strong interest in AI evolving to be more intuitive, inclusive, and context-aware.

The answers indicate a blend of satisfaction and aspirations for AI-powered linguistic solutions, with the need for better contextual awareness, cultural awareness, and adaptive learning. Most propose upgrading AI to identify idiomatic expressions, fine-tune speech recognition, and deliver personalized feedback for enhanced fluency. There is also a call for bias minimization and enhanced multilingualism, especially for languages such as Urdu and Pashto. Whereas some of the respondents are of the opinion that no improvements are needed, others think AI should become more intuitive, interactive, and facilitative of active learning. The overall feedback reflects a need for AI tools to be more inclusive, smart, and responsive to the needs of diverse languages.

Findings

The survey findings are of great importance to the demographic data, usage of AI tools, and user sentiments towards their efficiency in language learning. The important findings are:

1.Demographics:

Respondents were mostly men (73%), followed by women (24.3%), with a small number choosing not to state their gender.

The largest number of participants (64.9%) were between 18 and 25 years old, showing that the youth are more active with AI tools for textual analysis.

A major section (48.6%) of the respondents consisted of undergraduates, followed by 35.1%

postgraduates, indicating a powerful academic user community.

2. **Professional Background and AI Adoption**:
The majority of respondents (64.9%) consisted of students, further substantiating the notion that AI tools find their greatest adoption in academic institutions.
78.4% of respondents had used AI tools before, whereas 21.4% had never even used them before, reflecting extremely high familiarity and adoption rates.
GPT-based models (26 respondents), Google Translate (17 respondents), and Grammarly (13 respondents) were the most widely used AI tools, highlighting AI's significance in text analysis, translation, and grammar correction.
Usage Frequency of AI Tools:
35.1% of respondents employed AI tools every day, and 29.7% utilized them weekly, reflecting frequent use.
24% of respondents used AI tools monthly, and 10.8% used them sporadically, reflecting differential use of AI for language learning.

4. AI Effectiveness Perceptions:
no\t13.5 respondents graded AI tools as very effective (5), 9 grading them 4, showing a mostly optimistic view.
The respondents gave a neutral grade of 3, 5 gave a grade of 2 and 3 graded them as not effective at all.
Grammarly was rated very high for accuracy, with 14 of the respondents giving it a rating of 5 (very accurate) and 10 giving it a rating of 4. There was still some scepticism among a smaller number.
AI pronunciation tools were given mixed ratings, with 11 of the respondents giving them a rating of very effective and 9 giving them a neutral rating.

5. Challenges in AI Usage:
Some respondents found AI tools useful, but challenges like reliability, understanding context, and accuracy were mentioned.
There was a small percentage of users who were dissatisfied with AI tools for pronunciation and language learning, which reflects the necessity for further development and tailoring.

Conclusion
The results of the survey indicate that AI tools are an important part of language learning and textual analysis, especially among students and researchers. The high rate of adoption and regular usage reflect an increasing dependence on AI-based applications for academic and professional use. Though GPT-based models, Grammarly, and Google Translate are the most widely used, their efficacy is viewed differently. Though there is an overall positive opinion, some are still in doubt regarding the accuracy and understanding of AI tools, especially in grammar checking and pronunciation correction.

Future Recommendations
1. Improving AI Accuracy: It is recommended that developers aim to enhance AI tools' understanding and accuracy, especially when it comes to grammar checking and pronunciation guidance.
2. User Education and Training: Institutions should provide training programs to help students and professionals effectively integrate AI tools into their language learning practices.
3. Diversification of AI Offerings: While GPT-based models dominate, further exploration of alternative AI tools could provide users with more tailored and specialized options.
4. Addressing User Concerns: AI developers should work on reducing errors and biases in AI-generated content to enhance trust and reliability.

REFERENCES

Bulut, O., Beiting-Parrish, M., Casabianca, J. M., Slater, S. C., Jiao, H., Song, D., ... & Morilova, P. (2024). The rise of artificial intelligence in educational measurement: Opportunities and ethical challenges. *arXiv preprint arXiv:2406.18900*. https://doi.org/10.48550/arXiv.2406.18900

Stamatatos, E. (2009). A survey of modern authorship attribution methods. *Journal of the American Society for information Science and Technology*, *60*(3), 538-556. https://doi.org/10.1002/asi.21001

Alaqlobi, O., Alduais, A., Qasem, F., & Alasmari, M. (2024). Artificial intelligence in applied (linguistics): a content analysis and future prospects. *Cogent Arts & Humanities*, *11*(1). https://doi.org/10.1080/23311983.2024.2382422

Jiang, Y., Li, X., Luo, H., Yin, S., & Kaynak, O. (2022). Quo vadis artificial intelligence? *Discover Artificial Intelligence*, *2*(1), 4.

Abbas, H., Amin, Z., & Ahmad, R. (2023). Colonial Imprints on Nature: Ecocritical Explorations in Abdulrazak Gurnah's Afterlives. *Pakistan Journal of Society, Education and Language (PJSEL)*, *10*(1), 450-459.

Abbas, H., Abbas, A., Iqbal, A., & Khalil, P. Z. (2023). Echoes of Haunted Memories and Nightmares: Understanding Trauma in Gurnah's Afterlives. *University of Chitral Journal of Linguistics and Literature*, *7*(II), 99-105.

Khan, S., Ahmad, R., & Abbas, H. (2024). An Analytical Study of The Deforming Tendencies in The English Translation of Manto's Toba Tek Singh by Khalid Hasan. *International Research Journal of Management and Social Sciences*, *5*(1), 802-811.

Georgiou, G. P. (2024). Differentiating between human-written and AI-generated texts using linguistic features automatically extracted from an online computational tool. *arXiv preprint arXiv:2407.03646*. https://doi.org/10.48550/arXiv.2407.03646

Ta, R. & Lee, N., 2023. *How language gaps constrain generative AI development*, Brookings Institution. United States of America. Retrieved from https://coilink.org/20.500.12592/p57pcd on 31 Jan 2025. COI: 20.500.12592/p57pcd.

Groenewald, E. S., Pallavi, P., Rani, S., Singla, P., Howard, E., & Groenewald, C. A. (2024). Artificial Intelligence in Linguistics Research: Applications in Language Acquisition and Analysis. *NATURALISTA CAMPANO*, *28*(1), 1253-1262.

Zhang, C., & Lu, Y. (2021). Study on artificial intelligence: The state of the art and future prospects. *Journal of Industrial Information Integration*, *23*, 100224.https://doi.org/10.1016/j.jii.2021.100224

Huang, X., Zou, D., Cheng, G., Chen, X., & Xie, H. (2023). Trends, research issues and applications of artificial intelligence in language education. *Educational Technology & Society*, *26*(1), 112-131. https://www.jstor.org/stable/48707971

Sardinha, T. B. (2024). AI-generated vs human-authored texts: A multidimensional comparison. *Applied Corpus Linguistics*, *4*(1), 100083. https://doi.org/10.1016/j.acorp.2023.100083

Mizumoto, A., Yasuda, S., & Tamura, Y. (2024). Identifying ChatGPT-generated texts in EFL students' writing: Through comparative analysis of linguistic fingerprints. *Applied Corpus Linguistics*, *4*(3), 100106.

Rathje, S., Mirea, D. M., Sucholutsky, I., Marjieh, R., Robertson, C. E., & Van Bavel, J. J. (2024). GPT is an effective tool for multilingual psychological text analysis. *Proceedings of the National Academy of Sciences*, *121*(34), e2308950121. https://doi.org/10.1073/pnas.2308950121

Maruthi, S., Babu Dodda, S., Reddy Yellu, R., Thuniki, P., & Reddy Byrapu Reddy, S. (2021). Deconstructing the Semantics of Human-Centric AI: A Linguistic Analysis. *Journal of Artificial Intelligence Research and Applications*, *1*(1), 11-30. https://aimlstudies.co.uk/index.php/jaira/article/view/24

Muñoz-Ortiz, A., Gómez-Rodríguez, C., & Vilares, D. (2024). Contrasting linguistic patterns in human and llm-generated news text. *Artificial Intelligence Review*, *57*(10), 265. https://doi.org/10.48550/arXiv.2308.09067.